SECTION 07843

FIRE-RESISTIVE JOINT SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY

A. This Section includes fire resistant joint systems through fire resistance rated assemblies, consisting of adjacent wall and floor assemblies and the materials designed to prevent the spread of fire through openings through wall and floor assemblies, including:
   1. Floor to floor joint systems
   2. Wall to wall joint systems
   3. Floor to wall joint systems
   4. Head of wall joint systems

B. Related Sections:
   1. Section 03300, "Concrete Work" for construction of openings in concrete slabs and walls.
   2. Section 07841 "Through Penetration Fire Stopping" for firestopping through fire-resistance-rated assemblies.
   3. Section 07842 "Perimeter Fire Containment" for safing insulation and accessories.

1.3 PERFORMANCE REQUIREMENTS

A. For the following constructions, provide fire resistant joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assembly.
   1. Fire-resistance-rated walls, including partitions, with fire-protection-rated openings.
   2. Fire-resistance-rated floor assemblies.

B. Rated Systems: Provide fire resistant joint systems with assembly-ratings, as determined per UL 2079, “Tests for Fire Resistance of Building Joint Systems”.
   1. Movement Capability: Joint systems shall be cycled through the movement range of 500 cycles or 100 cycles at a minimum rate of 1, 10, or 30 cycles per minute prior to the test and classified as follows:
      a. Class II: 500 cycles at 10 cycles per minute
   2. Load Bearing: Joints required to be load bearing shall be evaluated with the load during the time test.

C. For fire resistant joint systems exposed to view, traffic, moisture, and physical damage, provide products that after curing do not deteriorate when exposed to these conditions both during and after construction.
   1. For floor penetrations exposed to loading and traffic, provide fire resistant joint systems capable of supporting floor loads involved.

D. For fire resistant joint systems exposed to view, provide products with flame-spread ratings of less than 25 and smoke-developed ratings of less than 450, as determined per ASTM E 84.

1.4 SUBMITTALS

A. Product Data: For each type of fire resistant joint system product indicated.

B. Shop Drawings: For each fire resistant joint system, show each kind of construction condition and relationships to adjoining construction. Include design designation of testing and inspecting

agency acceptable to authorities having jurisdiction that evidences compliance with requirements for each condition indicated.

1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each fire resistant joint system configuration for construction and penetrating items.
2. Where Project conditions require modification of qualified testing and inspecting agency's illustration to suit a particular fire resistant joint condition, submit illustration, with modifications marked, approved by fire resistant joint system manufacturer's fire-protection engineer.

C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Product Certificates: Signed by manufacturers of fire resistant joint system products certifying that products furnished comply with requirements.

E. Product Test Reports: From a qualified testing agency indicating fire resistant joint system complies with requirements, based on comprehensive testing of current products.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed fire resistant joint systems similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Source Limitations: Obtain fire resistant joint systems, for each kind of construction condition indicated, from a single manufacturer.

C. Fire-Test-Response Characteristics: Provide fire resistant joint systems that comply with the following requirements and those specified in "Performance Requirements" Article:

1. Fire resistant joint system tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL, or another agency performing testing and follow-up inspection services for fire resistant joint systems acceptable to authorities having jurisdiction.
2. Fire resistant joint systems are identical to those tested per UL 2079 Provide rated systems complying with the following requirements:.
    a. Fire resistant joint system products bear classification marking of qualified testing and inspecting agency.
    b. Fire resistant joint systems correspond to those indicated by reference to fire resistant joint system designations listed by the following:
        1) UL in "Fire Resistance With Hourly Ratings for Joint Systems and Through-Penetration Firestop Systems."

D. Preinstallation Conference: Conduct conference at Project site to comply with general provisions of the contract.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver fire resistant joint system products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer; date of manufacture; lot number; shelf life, if applicable; qualified testing and inspecting agency's classification marking applicable to Project; curing time; and mixing instructions for multicomponent materials.

B. Store and handle materials for fire resistant joint systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install fire resistant joint systems when ambient or substrate temperatures are outside limits permitted by fire resistant joint system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilate fire resistant joint systems per manufacturer's written instructions by natural means or, where this is inadequate, forced-air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Hilti Construction Chemicals, Inc.
2. Nelson Firestop Products.
3. Specified Technologies Inc.
4. 3M Fire Protection Products.
5. Tremco.

2.2 FIRE RESISTANT JOINT SYSTEMS, GENERAL

A. Compatibility: Provide fire resistant joint systems that are compatible with one another, with the substrates forming openings, and with the items, if any, penetrating fire resistant joint systems, under conditions of service and application, as demonstrated by fire resistant joint system manufacturer based on testing and field experience.

B. Accessories: Provide components for each fire resistant joint system that are needed to install fill materials and to comply with "Performance Requirements" Article. Use only components specified by fire resistant joint system manufacturer and approved by the qualified testing and inspecting agency for fire resistant joint systems indicated. Accessories include, but are not limited to, the following items:
1. Permanent forming/damming/backing materials, including the following:
   a. Temporary forming materials.
   b. Substrate primers.

2.3 FILL MATERIALS

A. Provide fire resistant joint systems containing the types of fill materials indicated in the Fire resistant joint System Schedule at the end of Part 3 by reference to the types of materials described in this Article. Fill materials are those referred to in directories of the referenced testing and inspecting agencies as fill, void, or cavity materials.

B. Latex Sealants: Single-component latex formulations that after cure do not re-emulsify during exposure to moisture.

C. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

D. Silicone Sealants: Moisture-curing, single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:
1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces and nonsag formulation for openings in vertical and other surfaces requiring a nonslumping, gunnable sealant, unless indicated fire resistant joint system limits use to nonsag grade for both opening conditions.

2.4 MIXING

A. For those products requiring mixing before application, comply with fire resistant joint system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Clean out openings immediately before installing fire resistant joint systems to comply with written recommendations of fire resistant joint system manufacturer and the following requirements:
   1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of fire resistant joint systems.
   2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with fire resistant joint systems. Remove loose particles remaining from cleaning operation.
   3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by fire resistant joint system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent fire resistant joint systems from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from fire resistant joint system materials. Remove tape as soon as possible without disturbing fire resistant joint system's seal with substrates.

3.3 FIRE RESISTANT JOINT SYSTEM INSTALLATION

A. General: Install fire resistant joint systems to comply with "Performance Requirements" Article and fire resistant joint system manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
   1. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of fire resistant joint systems.

C. Install fill materials for fire resistant joint systems by proven techniques to produce the following results:
   1. Fill voids and cavities as required to achieve fire-resistance ratings indicated.
   2. Apply materials so they contact and adhere to substrates formed by openings.
   3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 CLEANING AND PROTECTION

A. Clean off excess fill materials adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by fire resistant joint system manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure fire resistant joint systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated fire resistant joint systems immediately and install new materials to produce fire resistant joint systems complying with specified requirements.

3.5 FIRE RESISTANT JOINT SCHEDULE

A. Where UL-classified systems are indicated, they refer to the alpha-alpha-numeric designations listed in UL's "Fire Resistance Directory" under product Category XHBN.

JOINT DESCRIPTION	UL SYSTEM	UL NUMBER	JOINT MATERIAL
Floor to Floor	FF-D	0001-0999 1000-1999 2000-2999 3000-3999 4000-4999	Latex Sealants Silicone Foam Silicone Sealants
Wall to Wall	WW-D	0001-0999 1000-1999 2000-2999 3000-3999 4000-4999	Latex Sealants Silicone Foam Silicone Sealants
Floor to Wall	FW-D	0001-0999 1000-1999 2000-2999 3000-3999 4000-4999	Latex Sealants Silicone Foam Silicone Sealants
Head of Wall	HW-D	0001-0999 1000-1999 2000-2999 3000-3999 4000-4999	Latex Sealants Silicone Foam Silicone Sealants

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